Homogeneous structures and automorphism invariant measures

Bálint Király

First, we recall that for a structure $\mathbf{A}$, the density of a certain subset (of so-called locally finite automorphisms) in $Aut(\mathbf{A})$ plays an important role in the existence of a proper measure on $Aut(\mathbf{A})$, and that in a certain situation, this condition is in fact applicable.
Then we try to give form to this measure, in the sense that we construct a measure, and show that it is unique over a certain σ-algebra. This σ-algebra then turns out to contain all the Borel sets in the case of residually finite groups.
In the second part, we try a model theoretic approach. We want to see, when could we move measures between arbitrary structures. We find, that if a certain function exists between two structures, then having a measure on one of them is in fact equivalent to having one on the other. Using that function we show that - under some restrictions - we can move measures between the set of relatively definable subsets of $Aut(\mathbf{A})$ and the definable subsets of ${}^{\mathbf{A}}\mathbf{A}$.
In the last chapter, we expand the area of investigation to the amenability of Stone spaces. Finally, we compose the results and make some conclusions.